paar proper, but quite distinct from the appearance of the sea bottom last March.

The third "pearl-oyster" article, also by Dr. Pearson, is a report on the remarkable "window-pane oyster," *Placuna placenta,* in the great inland sea at Tamblegam, near Trincomalee; and other papers, by various authors, on fresh-water fishes, Oligochætes, Termites, &c., all show that the investigation of the natural history of Ceylon is in capable hands, and bids fair soon to make the fauna and flora of that charming island better known than those of most other parts of the eastern tropics.

NOTES.

As we went to press last week a case was concluded in the course of which the methods of anti-vivisectionists were again exposed. A Swedish lady, Miss Lind-af-Hageby, brought an action against *The Pall Mall Gazette* and Dr. Saleeby for alleged libel published in *The Pall Mall Gazette.* The jury, after listening to sixteen days of talking, gave their verdict for the defendants, and the judge received their verdict with most emphatic and outspoken approval. It has all happened before. There comes an opportunity for legal action: the statements of anti-vivisectionists are brought to the test of evidence on oath; the whole thing is thrashed out in the Law Courts, and the inevitable verdict is given. *The Pall Mall Gazette* has done a great service to the nation by thus exposing, once more, the uncharitableness—to say the least—of anti-vivisectionists. The Research Defence Society, likewise, deserves the thanks of lovers of truth. We trust that the public will bear in mind the lesson of this case, and will treat with contempt the methods upon which the obscurantism of anti-vivisection thrives. A campaign which appeals to those who have been least fortunate in the matter of education, inflames passion, stirs up hatred, and delights in imputing evil to men who are devoting their lives to the increase of knowledge of diseases which afflict mankind, may not be stopped on its downward course by the verdict given last week, but the light which was thrown upon it in the course of the evidence will perhaps do something to scatter the thick darkness of prejudice which anti-vivisection requires for its existence.

THE Bill to consolidate and amend the law relating to ancient monuments was read a second time last Thursday in the House of Lords. Such a measure must necessarily be tentative, and Earl Beauchamp admitted that it was not ideal. But he claimed justly that it was a considerable step for the object in view, while in no way penalising owners or interfering with the rights of property. The same difficulties occur as in other branches of the movement to make the country a decentralised museum, both of antiquities and of natural history and scenery. But there are also special difficulties in the case of ancient monuments. The Marquess of Salisbury pointed out that consideration would have to be given to the resident owner of a historic house. The question might arise as to whether he could be precluded from throwing two bedrooms into one. The case of cathedrals is peculiar, as Earl Curzon of Kedleston showed; they are not protected by a faculty, as churches are, but are the absolute property for the time being of the dean and chapter. Earl Beauchamp had not seen his way to include ecclesiastical buildings, but it appears that the bishops would not object to the inclusion of cathedrals. The power of purchase by the State is eliminated from the Bill; full powers for a Preservation Order are considered to render this unnecessary. The power of purchase is given to the local authorities, chiefly in view of the smaller monuments of local interest. Here comes in the difficulty of funds; even for small purchases there must be an increase of the rates. Meanwhile the larger monuments seem to be unprotected. There is no doubt that owners of great historic heirlooms do treat them as in trust for the nation. But the modern tendency is to bring this spirit into the machinery of organisation. The passing of such a Bill may be expected to react favourably on the connected questions of nature reserves and the endowment of science.

THE relation between insect-eating birds and the abundance or otherwise of insects, ticks, and other creatures which may act as hosts for organisms associated with various diseases, is known to every biologist. A correspondence between Sir Harry Johnston and the chairman and secretary of the Plumage Committee and Textile Trade Section of the London Chamber of Commerce, published in *The Times* of Tuesday, April 29, deals with some points of this relationship, with particular reference to tsetse-flies, mosquitoes, and other blood-sucking insects of Africa. Sir Harry Johnston points out that tsetse-flies of the genus Glossina are particularly abundant in all those parts of West and Central Africa where the plumage trade has done so much to lessen the numbers of the insect-eating birds—more especially white herons (egrets, large and small), ibises, rollers, bee-eaters, glossy starlings, drongo and "cuckoo" shrikes, bishopfinches, and kingfishers. As remedial measures to prevent the disturbance of the balance of nature caused by the destruction of these birds, he suggests "that the secretary to the British Museum (Natural History) or the secretary to the Zoological Society, or perhaps the two jointly, should be asked to compile a list of species, genera, and perhaps families of birds which should be placed on the prohibited list. That is to say, that the skins or other trophies of such birds should be forbidden as an article of import into Great Britain and Ireland and into all parts of the Empire of which the fiscal affairs are influenced by the Foreign and Colonial Offices; and that we should use our best endeavours with the Governments of the self-governing portions of the British Empire to secure a like prohibition in their own Customs regulations."

IN a letter to the Lord Mayor, the Prime Minister has announced the extent of the provision which the Government proposes to make for the dependents of Captain Scott and of those who so heroically lost their lives with him in the Antarctic. The Government intends to ask Parliament to sanction a Special

Vote sufficient to provide as follows:—For Lady Scott (in addition to the Admiralty pension of 200*l.* per annum for herself and 25*l.* per annum for her son, until he reaches the age of eighteen) an annuity of 100*l.* For Mrs. Scott, the mother, and Mrs. Campbell and Miss Grace Scott, the sisters, of Captain Scott, a joint annuity of 300*l.* For Mrs. Wilson, the widow, and Miss Mary Souper, the sister-in-law, of Dr. E. A. Wilson, a joint annuity of 300*l.* For Mrs. Evans, the widow of Petty Officer E. Evans (in addition to the pension and allowances awarded to her by the Admiralty, amounting to 13*s.* 6*d.* a week), a further annuity of 12*s.* 6*d.* a week for herself and 3*s.* a week in respect of each of her children up to the age of eighteen. The Government of India, in the service of which Lieutenant Bowers was before joining the expedition, has offered to provide pensions, amounting in all to 100l. per annum, for his mother and sisters. Captain Oates, the fifth member of Captain Scott's southern party, was unmarried; and as no mention is made of any relatives, it may be assumed that he was possessed of ample means. In addition to the provision referred to above, the total amount subscribed by the public as a memorial for the dead explorers and kindred purposes is 55,760*l.*

On Monday last Sir Clements Markham, at the meeting of the Royal Geographical Society, gave a paper on Vasco Nuñez de Balboa, in commemoration of the fourth centenary of the discovery of the Pacific Ocean in 1513. The anniversary actually falls in September. The author did full justice to the discoverer's strength and many other excellences of character, which stand out in contrast with the majority of his compeers in the same field; the question, often asked, was repeated, What would the history of western South America and its highly civilised native races have been if Nuñez and others such as he had been allowed the chance to establish friendly relations with them and assimilate their ideals with those of Europe, instead of their suffering the extreme penalty of extermination? Two noteworthy efforts of geographical theorising were discussed as following upon Nuñez's discovery. The first was the well-known and successful endeavour of Magellan to turn the flank of the South American barrier, and to sail his vessel directly from the Atlantic into the Pacific. The second, less familiar, was the brilliant reasoning by which Andres de Urdaneta, in 1565, succeeded in piloting a return voyage across the Pacific from west to east, for the first time, by following a northerly course, on which were found favourable winds, the reverse of those which prevailed on the more southerly course followed by the earlier navigators across the ocean from east to west. Reference was made to the work still awaiting trained explorers in the very area of Nuñez's crossing of the isthmus of Darien.

We are glad to learn from the annual statement on the work of the Post Office, made in the House of Commons on April 24 by the Postmaster-General, that it is proposed to establish a new service for the synchronising of clocks. For a small fee per annum the Post Office will send every day an hourly time signal. Any institution, business house, or industrial establishment to which it is important to have the correct time and which is willing to provide the internal apparatus for the clocks can obtain for a small fee an hourly time service. The fee may vary with the distance, but if there are a sufficient number of subscribers it will be about £2 a year. The Greenwich time signal will be transmitted once daily over telegraph circuits for the regulation of master clocks fixed at suitable "distributing centres" at head or branch post offices, and these master clocks will transmit hourly impulses to the premises of persons requiring the service. The Post Office will provide and maintain the distributing wire up to a suitable point at the renter's premises, but it will rest with the renter at his own expense to fix and maintain to the satisfaction of the Post Office all other wiring within his premises, as well as the clock and the synchronising mechanism. The arrangement will be confined for the present to the central districts of large towns. It will be recalled that the British Science Guild has taken a leading part in directing attention to the importance of synchronising all clocks publicly exhibited. In the fifth annual report of the guild a committee appointed to deal with the subject described the position of the subject at home and in some other countries, and stated the results of representations made to the Post Office, the London County Council, the Corporation of London, and other authorities. The hope was expressed by the committee that the Post Office would before long be in a position to offer facilities to the public for the synchronisation of clocks at such rental rates as should remove the main objections which have been urged to the general adoption of the principle. The announcement now made by Mr. Samuel seems to represent the realisation of this desire.

The first conversazione of the Royal Society for this year will be held in the rooms of the society at Burlington House on Wednesday, May 7.

The death is announced, on April 25, of Prof. J. Park, professor of logic and metaphysics in the Queen's University (formerly Queen's College), Belfast, since 1868.

The Berlin correspondent of *The Times* announces that Prof. Fritz von Bramann, professor of Halle University, and director of the surgical laboratory there, died on April 26, at fifty-eight years of age.

We learn from the *Revue Scientifique* that the teachers of the Normal School at Avignon, of which M. J. H. Fabre, the entomologist, was a pupil, are taking steps to raise a fund with the view of erecting a monument to "The Insects' Homer." The general council of Vaucluse has voted 1500 francs to the fund.

On Saturday, May 10, Mr. H. A. Humphrey will begin a course of two lectures at the Royal Institution on Humphrey internal-combustion pumps. The Friday evening discourse on May 9 will be delivered by Mr. F. Balfour Browne on the life-history of a water-beetle, and on May 16 by Captain Cecil G. Rawling on the Pygmies of New Guinea.

The Geologists' Association has arranged a Whitsuntide excursion to Nottingham, from May 9 to May

14. The directors are Prof. J. W. Carr, Prof. H. H. Swinnerton, Mr. G. W. Lamplugh, and Rev. E. H. Mullins. The party will travel *viâ* Great Central Railway on Friday, May 9, by the train leaving Marylebone Station at 4.45 p.m., and due at Victoria Station, Nottingham, at 7.37 p.m.

Dr. Alexander Smith, professor of chemistry at Columbia University, New York, has accepted election to the chair of that subject at Princeton. Prof. Smith is a Scotsman by birth, and graduated in science at Edinburgh University, where he was for a short time an assistant in chemistry. He went to America in 1890, and held professorships successively at Wabash College and the University of Chicago before his appointment to Columbia.

In our issue of December 19, 1912, Prof. Milne announced that Mr. Shinobu Hirota had been compelled by ill health to return to his native country, Japan. We regret now to learn that Mr. Hirota died on April 24. During the eighteen years he lived in England as assistant to Prof. Milne, he played an active part in establishing a new branch of geophysics, and had he recovered he might well have continued in Japan the work to which he was devoted.

At an extraordinary general meeting of the University of Durham Philosophical Society, to be held in the Physical Lecture Theatre, Armstrong College, Newcastle-on-Tyne, to-morrow, May 2, Sir J. Alfred Ewing, K.C.B., F.R.S., will deliver a lecture on the structure of metals. The occasion is the first meeting to be presided over by the Duke of Northumberland, and has been arranged in connection with his installation as Chancellor on the following day.

The council of the Institution of Civil Engineers has made the following awards for papers read and discussed during the session 1912–13:—A Telford gold medal to Mr. Murdoch Macdonald, C.M.G. (Cairo); a George Stephenson gold medal to Mr. G. D. Snyder (New York); a Watt gold medal to Mr. H. A. Humphrey (London); Telford premiums to Messrs. C. W. Methven (Durban), B. Hall Blyth, jun. (Edinburgh), C. J. Crofts (Durban), Frank Grove (Canton), B. T. B. Boothby (Hankow), and Francis Carnegie (Enfield Lock), and the Manby premium to Capt. C. E. P. Sankey, R.E. (London).

The French aviator, M. Gilbert, on April 25 covered a distance of some 512 miles, from near Paris to Vittoria, in northern Spain, on a biplane, in 8 hours 23 minutes, without once alighting. He is reported to have travelled from Paris to Bordeaux at a speed averaging seventy-four miles an hour. Between Bordeaux and Biarritz he flew at a height of nearly 10,000 ft. Starting again after two hours' rest, he added another 155 miles to his flight, arriving at Medina del Campo, thus covering, in less than eleven hours, 668 miles.

A distinguished committee has been formed, with the King of Italy as president, to obtain funds by public subscription for the institution of suitable memorials of the late Prof. Giovanni Schiaparelli, whose work for astronomical science is of the first rank of importance. It is proposed to erect to his memory a monument at Savigliano, his birthplace, and to place a tablet bearing his effigy in the Brera Palace at Milan, where he described his observations and conclusions. Among the members of the honorary committee are the presidents of the chief scientific societies in Italy, rectors of the universities, and directors of astronomical observatories. The president of the executive committee is M. Gullino, the Syndic of Savigliano (Cuneo), to whom subscriptions should be sent.

The executive committee of the British Science Guild has issued a report on the Milk and Dairies Bill and on further legislation desirable on the subject. While expressing general approval with the Bill as a whole, the committee fears that its largely permissive character will allow local authorities to ignore the powers conferred upon them. It considers that the medical officer of health is placed in a difficult position by having to criticise, and possibly to be instrumental in instituting legal proceedings against, those who appoint him, who may have the power to terminate his appointment. The committee also regards the provisions as inadequate to check the supply of tuberculous milk. Comment is made on bovine tuberculosis and the means for stamping it out, and the opinion is expressed that the Bill grapples with the evil of bovine tuberculosis only in its fully developed form, and not with the less manifest or latent forms of the disease, which it is equally, or even more, important should be dealt with.

We are informed that the Crocker Land expedition, which was postponed for a year on account of the death of Mr. George Borup, has been completely reorganised during the past year, and that the plan now is to send it northward in July next. The object of the expedition is the scientific exploration of the land supposed to lie north-west of the line of islands stretching from Grant Land to Prince Patrick Land. In addition to the mapping of the new land and of the uncharted coast lines in the vicinity of Grant Land and Axel Heiberg Land, the party will carry on studies during a period of more than two years in many other branches of science, including meteorology, terrestrial magnetism, wireless telegraphy, seismology, geology, zoology (both vertebrate and invertebrate), botany, ethnology, and archæology. The *personnel* of the expedition is as follows:—Mr. Donald B. Macmillan, leader of the expedition; Ensign Fitzhugh Green, U.S. Navy, map work, electrical work, terrestrial magnetism, and seismology; Mr. W. Elmer Ekblaw, geologist and ornithologist; Mr. M. C. Tanquary, zoologist, with particular reference to invertebrate zoology.

In addition to the appropriation for defraying the expenses of the current work and operations of the department of terrestrial magnetism, the trustees of the Carnegie Institution of Washington, at its annual meeting last December, set aside one hundred thousand dollars for the purchase of a site and erection of a building for the department. After an inspection of various sites, one embracing about seven acres, situated in the district of Columbia, near Rock

Creek Park, was finally found suited for the purpose, and has now been purchased. The building will be about 52 by 101 ft., and will consist of two stories and a basement. It will contain adequate facilities for office, laboratory work, and instrument shop, and will be ready for occupation early in 1914. The magnetic survey yacht *Carnegie* left St. Helena on April 9 bound for Bahia, and is expected to return to her home port at the end of the year, thus completing the three years' circumnavigation cruise begun in June, 1910. After leaving Bahia she will once more call at St. Helena, and proceed next to Falmouth, where she is due early in September. It will be recalled that the *Carnegie* made Falmouth one of her chief ports on the cruise of 1909.

ONE of the most beautiful objects in western England is the famous screen in Banwell Church, about seventeen miles south-west of Bristol, in co. Somerset. Among the most treasured possessions of the parish is a record of churchwardens' accounts between 1515 and 1602, which give full particulars of the cost of the screen and of the workmen engaged upon it. These have been abstracted, with good illustrations of this fine piece of woodwork, by the vicar, Rev. C. S. Taylor, in part i., vol. xxxv., of the Transactions of the Bristol and Gloucestershire Archæological Society for 1912.

NIGERIA presents a promising and almost unworked field for the collection of folk-tales. Major A. J. N. Tremearne, in his recently published "Hausa Superstitions and Customs," has issued a large number of tales. From Southern Nigeria Mr. E. Dayrell, District Commissioner, in continuation of his "Folk Stories from Southern Nigeria," published in 1910, has now published, through the Royal Anthropological Institute, a series of Ikom folk-stories. These are of much ethnological interest, as they throw much light on matrimonial customs, of which female circumcision forms part. He also deals with human sacrifice and the Ju-ju form of sorcery, on which our information is still incomplete. "The more," he says, "one learns about Ju-ju the more hopeless it seems. It must seem incredible to people at home that a man can die because a Ju-ju has been made against him—for example, two sticks crossed on the path with, say, a rotten egg and a fowl stuck on a stick, the man's name having been 'called.' And yet one knows of numerous instances where men have died, and young, healthy men, too, against whom such a Ju-ju has been made." Parallel instances from Australia at once suggest themselves. Mr. Dayrell thinks it possible, in such cases, that poison may have been administered, but it is most difficult to get any proof.

THE power of the body to adapt itself to its needs is one of the most familiar of physiological truths. It has long been known that among the organs the heart shows ready adaptability. This is very strikingly illustrated by numerous measurements recently published by Dr. Grober, of Jena (*Naturwissenschaftliche Wochenschrift,* April 6 and 13). The figures refer to men in different employments, and to various animals with varying activities. The most remarkable fact (the explanation of which is not clear) recorded is that the right side of the heart usually increases in bulk more than the left side does.

The British Review for April contains an interesting article, entitled "Colour-hearing," in the form of a dialogue between the writer ("C. C. Martindale"), an "exceedingly eminent specialist" ("the Doctor"), a lady ("Mrs. X."), a scoffer ("the Metaphysician"), and "N. K.," who is able to "hear colour" (or, more accurately, to "see sounds"). No one acquainted with the characteristics of synæsthesia can doubt that it is a substantially accurate account of a conversation that took place. Indeed, the anonymity of "the Doctor" and "Mrs. X." is but thinly veiled. The article is hence of value to those interested in the study of this attractive but obscure subject.

THE Adamson lecture for 1913, delivered by Prof. Bernard Bosanquet, in the University of Manchester, entitled "The Distinction between Mind and its Objects," consists in a brilliantly critical examination of the claims of Modern Realism—a twentieth-century philosophical school of thought, "which, whether unsatisfactory or not, is definitely new." Prof. Bosanquet reaches the conclusion that neither Realism nor its antagonist, Mentalism, is satisfactory *per se.* "What special use or gain," he asks, "is there in saying that knowledge is physical, when you have to subjoin an elaborate explanation admitting into this physical reality all the ignorance, errors, and illusions that the feeblest or most fantastic of minds could be guilty of? Or what gain for mentalism is there in treating knowledge as a part of your mind, when you must say in the same breath that it is only knowledge in virtue of the reality that appears in it? The double nature of knowledge, as the continuity of mind and reality, is the ultimate truth to insist on."

Two very interesting lectures on the present position of the sex-determination problem, by Profs. Correns and Goldschmidt, have been published by Borntraeger (Berlin), under the title "Die Vererbung und Bestimmung des Geschlechts" (pp. 149, price 4.50 marks). Prof. Correns deals with the subject largely from the botanical side, but devotes ten pages to the case of *Abraxas grossulariata,* and has numerous shorter references to other experiments with animals. Prof. Goldschmidt devotes the greater part of his section to an account of the cytological side of the subject. One of the difficulties in the study of this question has hitherto been that observations and experiments on the zoological and botanical side have been published largely in different periodicals, so that the worker on one side has been in some danger of overlooking results obtained on the other. For the zoological investigator, therefore, Prof. Correns's summary of our present knowledge of the phenomena of sex in plants is of great value. Prof. Goldschmidt gives a carefully chosen and lucid account of "sex-chromosomes," but the most valuable part of his section is probably the demonstration that there is no discordance between the cytological and experimental investigations; they are, in fact, complementary, and each confirms and amplifies the other. Both lectures are illustrated with excellent diagrams.

ACCORDING to the April number of *Museum News*, the Brooklyn Museum has installed an antarctic exhibition. On the walls of the alcove in which it is displayed are hung a map of the south polar region and prints illustrative of antarctic life. Among the specimens are a group of king-penguins, a young sea-elephant, various petrels (including the miscalled Cape pigeon), an albatross, and a black-footed penguin.

FROM the report for 1912 we learn that the Zoological Society has had, on the whole, a successful and prosperous year, the number of fellows being the highest on record, while, despite the enhanced cost of provisions, the income shows a healthy excess over normal expenditure. During the year the president and council have directed their attention to the subject of zoological nomenclature, and have expressed the opinion that "an absolutely invariable application of the rule of priority . . . is not to the advantage of zoological science, and that they would welcome a modification of it, as, for instance, by the establishment of an authoritative fiat list of reserved names." The compilation of such a list formed, we believe, a part of the deliberations at the recent Zoological Congress at Monaco. Reference is made to the loss of the valuable services of the society's librarian, Mr. F. H. Waterhouse, who retired on a well-earned pension after forty years' work.

THE annual report of the Norwich Castle Museum for 1912 records a decrease in the number of visitors on the previous year, due to the disastrous floods following on the unprecedented rainstorm in Norfolk on August 26 last, when the city of Norwich was practically isolated from the rest of the country. The success of the attempt to stimulate public interest, benefit the studious, and give point and purpose to the collections has again been evidenced by the large and appreciative audiences at the lantern lectures and demonstrations given at the museum under the auspices of the Norwich Museum Association. The subjects of lectures during the year 1912, to which a limited number of the general public were admitted free, were:—Food fishes, Prof. Garstang; poultry, Mr. Edward Brown; old-time methods of lighting, Mr. L. G. Bolingbroke; artistic glasswork, Mr. R. F. Martin; winged insects and their larvæ, Prof. F. V. Theobald; wild flowers and photography, Mr. H. E. Corke; and African big-game, Miss Cara G. Buxton. During the summer months a weekly exhibit of living specimens illustrative of nature-study was carried out by members of the association. A pleasing feature of the year is the interest evinced in the museum collections by the pupils from the council schools, 151 visits being arranged by the organiser of elementary education and 4789 pupils recorded.

VOL. xxxii. of the Observations made at the Royal Magnetical and Meteorological Observatory at Batavia refers to the year 1909. The preface, however, by the director, Dr. W. van Bemmelen, brings the history of the observatory down to 1912. It mentions the recent establishment of several mountain meteorological stations. Upper air and seismological observations have recently received considerable attention at Batavia, but are dealt with in different publications. The present volume comprises meteorology and terrestrial magnetism. Like previous volumes of the series, it contains numerous tables of meteorological data for the year. On p. 110 there is a summary of mean values based on from twenty-one to forty-six years. The annual variation of rainfall is unusually regular and marked, the monthly amount varying from 38 mm. in August to 332 mm. in January. As befits a station only 6° 11′ south of the equator, the annual variation of temperature is exceedingly small, the mean temperatures of the warmest and coldest months differing by only 1·04° C.

FOR some years magnetographs have been run at Buitenzorg, an electrically undisturbed station some twenty-five miles south of Batavia. There are two sets, one by Adie and a recent set by Töpfer and Schultze. Both sets record vertical force, but while the Adie set records as usual declination and horizontal force, the other set records the N.-S. and E.-W. components, and hourly values are given of these components in vol. xxxii. of the Observations made at the Royal Magnetical and Meteorological Observatory at Batavia. Declination at Buitenzorg is less than 1°, so that the diurnal variation of the horizontal force and its N.-S. component are almost identical, and the same is true of declination and the E.-W. component when the former is expressed in terms of force. Thus the departure from the ordinary procedure is more apparent than real. The introduction states that the magnetic character data for individual days are based entirely on the horizontal force, as being much the most disturbed element. The effects of magnetic storms are very readily traced in curves at the end of the volume showing the variation from day to day throughout the entire year in the absolute values of the several elements.

THE *Verhandlungen* of the German Physical Society for March 30 contains a communication made to the society on March 14 by Dr. E. Grüneisen, on the effects of temperature and pressure on the electrical resistivities of pure metals. He finds on examination of the results for the resistivities of copper, silver, platinum, gold, and lead down to very low temperatures that for each of them the resistivity varies as the product of the absolute temperature and the atomic heat at constant volume. Assuming Wien's law that the number of impacts between electrons in the metal and metal atoms is proportional to the square of the amplitude of oscillation of the atoms, he deduces that the resistivity of a metal at constant temperature should decrease as the pressure is increased, at a rate which is of the same order as that found experimentally by Williams, Beckmann and others. Alloys the resistivities of which can be calculated correctly by the law of mixtures from the resistivities of their constituents follow the same law.

IN the course of his address as president of the Institution of Mechanical Engineers, Sir H. F. Donaldson referred, among other matters, to the value of systematic research in engineering works. For example, in the heat treatment of steel, no amount of rule-of-thumb or the possession of an expert eye could ever ensure uniformity in results which vary enormously with but slight alterations in temperature; some system of pyrometry is called for as a protection against failures. The president suggests the establishment of an engineering research committee with a view to coordinate the work, to prevent overlapping, to ensure the carrying out of individual researches to absolute results, and to publish such results. In time the committee would acquire so large an accumulation of data as to make it the first source upon which the public would draw for information as to any research already effected, and as to the possibilities of extending research on lines which might seem to require investigation. The success which has attended the engineering standards committee might be regarded as holding out possibilities of success for an engineering research committee.

The Cambridge University Press will publish shortly a book on "Rubber and Rubber Planting," by Dr. R. H. Lock, dealing with the history of the use and cultivation of rubber, its botanical sources, the botanical physiology of rubber and latex, the diseases, chemistry, and manufacture of rubber, and with rubber planting.

The April edition of the catalogue of second-hand scientific instruments which are for sale or hire at the establishment of Mr. Charles Baker, 244 High Holborn, London, W.C., has reached us. The list includes some 2000 items, and an examination of the catalogue shows that customers can obtain second-hand practically every class of scientific instrument. Every instrument in the second-hand department is guaranteed to be in adjustment.

OUR ASTRONOMICAL COLUMN.

Astronomical Occurrences for May:—

May 1. 20h. 24m. Mars in conjunction with the Moon (Mars 0° 48′ S.).
4. 12h. 0m. Venus in conjunction with the Moon (Venus 1° 26′ N.).
5. 9h. 0m. Jupiter stationary.
7. 10h. 35m. Saturn in conjunction with the Moon (Saturn 6° 20′ S.).
10. 21h. 19m. Neptune in conjunction with the Moon (Neptune 5° 21′ S.).
12. 9h. 0m. Uranus stationary.
13. 17h. 0m. Venus stationary.
18. 3h. 0m. Mars in perihelion.
23. 10h. 23m. Jupiter in conjunction with the Moon (Jupiter 4° 56′ N.).
25. 0h. 50m. Uranus in conjunction with the Moon (Uranus 3° 38′ N.).
29. 1h. 0m. Saturn in conjunction with the Sun.
30. 15h. 0m. Venus at greatest brilliancy.
31. 2h. 25m. Mars in conjunction with the Moon (Mars 3° 9′ S.).
31. 6h. 31m. Mercury in conjunction with Saturn (Mercury 2° 4′ N.).

The Sun's Polar and Equatorial Diameters.—The *Annales de l'Observatoire Astronomique de Lô-sè* (China), tome vi., contains three parts, the second of which is devoted to an account of a photographic study of the polar and equatorial diameters of the sun as deduced from observations made during the period of 1905–10. The investigation was carried out by Le R. P. S. Chevalier, S.J., and had for its first object the discovery, if possible, of variations in the mean diameter of the sun. The results obtained may be briefly summarised as follows:—There is a difference between the polar and equatorial diameter, the former diameter being the greater of the two. This difference does not seem to be constant, and the variations indicated cannot, according to the author, be attributed to errors of observation, and, so far as he can see, must be due to the sun itself. Here are the values for each of the six years:—

Year		Pol.-Equat.
1905	...	+0·07″
1906	...	+0·17″
1907	...	+0·31″
1908	...	+0·29″
1909	...	+0·13″
1910	...	+0·17″
Mean	...	+0·19″ ± 0·015″.

With regard to the value of the mean diameter, he obtains 31′ 59·93″, which differs somewhat from that usually adopted, namely 31′ 59·26″, on the authority of Dr. Auwers, after a series of measures with the heliometer. While Chevalier points out that there is evidently a systematic error in one of the two sets of measures, and it may be in the photographic series, but he has not been able to trace it, yet, he asks, is it quite certain that it is excluded from the heliometric series, these measures all being made with instruments of the same type and short focal lengths?

United States Naval Observatory.—We have received a copy of the annual report of the Naval Observatory for the fiscal year 1912. This modest and admirably concise account of the year's work of three active and important departments, corresponding to our Greenwich and Kew observatories and the Nautical Almanac Office, merely forms appendix No. 2 to the annual report of the chief of the Bureau of Navigation. The department of the Nautical Almanac, under the direction of Prof. W. S. Eichelberger, U.S. Navy, who represented the observatory at the Congrès International des Ephémérides Astronomiques, held at Paris in 1911, has expressed, under authority of the U.S. Congress, its willingness to adopt the programme of exchanges of data recommended at the Paris meeting. Particulars are given of various significant changes it is proposed to make in the American Ephemeris and Nautical Almanac, beginning with the edition of 1916. Considerable progress appears to have been made in the adoption of the Sperry gyro-compass in the U.S. Navy; six battleships and two submarines are supplied with sets, and ten additional sets have been ordered. The ordinary magnetic compass is still retained in ships fitted with gyro-compasses. We are informed that the noon signal has been transmitted by radio-telegraphy to ships at sea since so long ago as January, 1905. Special attention is being devoted to making improvements in the instruments of nautical astronomy. Among a long list of novel apparatus we note that a gyroscopic artificial horizon has been tried.